

IN THE CLAIMS

Please replace the existing claims with the following substitute claims. Redline versions of the substitute claims are attached.

Sub D2 1. (Twice Amended) A range measuring device comprising a waveform adaptive ultra-wideband transmitter and receiver, said device comprising:

a switched impulse generator to generate a low-level waveform adaptive ultra-wideband signal;

a filter that filters said low-level ultra-wideband signal to define a center frequency thereof and to produce a filtered low-level ultra-wideband signal;

an antenna responsive to said filter to radiate a signal representing said filtered low-level ultra-wideband signal; and

a receiver for receiving said radiated ultra-wideband signal.

B1 Work 2. (Twice Amended) A communication system utilizing an ultra-wideband transmitter, said system comprising:

a switched impulse generator including one of an impulse-excited oscillator and a UWB impulse generator to generate a low-level ultra-wideband signal;

a filter responsive to said impulse generator;

an antenna responsive to said waveform adapter to radiate a representation of said ultra-wideband signal; and

a receiver for receiving said radiated ultra-wideband signal.

3. (Twice Amended) A method for detecting an object utilizing ultra-wideband transmitting techniques, said method comprising:

generating a switched impulse, low-level ultra-wideband signal;

filtering said switched impulse, low-level ultra-wideband signal;

transmitting a signal representing said waveform-adapted, ultra-wideband signal; and

receiving from said object a reflected pulse of said waveform adapted, ultra-wideband signal thereby to detect said object.

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4. (Twice Amended) A waveform adaptive ultra-wideband transmitter comprising:

a signal generator to generate a series of discrete low-level ultra-wideband signals having a selectable carrier frequency;

a waveform adapter responsive to said low-level ultra-wideband signals and including at least one of a bandpass filter, a mixer, a pulse shaper, and an attenuator that controls one of frequency, pulse shape, bandwidth, phase, multi-level amplitude, and multi-level attenuation of said low-level ultra-wideband signals, said waveform adapter controlling said low-level ultra-wideband signals on a dynamic, real-time basis; and

an antenna responsive to said waveform adapter to radiate ultra-wideband signals.

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7. (Amended) The range measuring device as recited in claim 1, further comprising an amplifier that amplifies one of

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said low-level waveform adaptive and said filtered low-level ultra-wideband signals.

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14. (Amended) The communication system as recited in claim 2 wherein said receiver comprises a tunnel diode to detect said radiated ultra-wideband signals.

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21. (Amended) The method of claim 3, further comprising the step of providing a tunnel diode to receive the reflected pulse.

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22. (Amended) The method of claim 3, further comprising, prior to said transmitting step, amplifying said waveform-adapted switched impulse, low-level ultra-wideband signal.

25. (Amended) The method of claim 3, further comprising, in the receiving step:

variably attenuating the reflected; and
detecting a signal produced by the reflected pulse
after said variably attenuating.

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26. (Amended) The method of claim 25, further including providing a tunnel diode to detect the reflected pulse.

27. (Amended) The method of claim 25, further including variably attenuating the reflected pulse to enable discrimination between noise and signals representing the echo.